SUMMARY AND CONCLUSION

Cancer is the leading cause of death worldwide. Chronic inflammation is induced by biological, chemical, and physical factors and is in turn associated with an increased risk of several human cancers. Chemotherapeutic drugs are used to treat a variety of cancers. However, use of these drugs is often associated with adverse side-effects. To combat this, these drugs are currently used in combination with other protective agents with the purpose of reducing its toxic effects. Therefore, alternative therapeutic approaches are needed for the management of cancer patients. Natural medicines have been reported to serve as biological response modifiers by activating, increasing, and or restoring the reactivity of immunological effectors mechanisms that are involved in resistance to tumor growth and metastasis. Traditional healers in different regions in India have routinely used *A. ferruginea* extract to treat several disorders.

Our initial investigation demonstrated that *A. ferruginea* extract shown strong inhibitory effect against acute and chronic inflammation models. From this, we conclude that *A. ferruginea* extract can impart a strong anti-inflammatory effect *in vivo*. This was further supported by exhibiting strong protective effect against acetic acid induced ulcerative colitis showing minimal damage to the mucosa and inhibited the infiltration of inflammatory cells in the colon. In another study, *A. ferruginea* extract shown effective inhibition of cyclophosphamide induced immunosuppression and urotoxicity. Treatment with *A. ferruginea* extract could significantly inhibited the ascites as well as solid tumor development. Lastly, our investigation showed convincing anti-
proliferation activity by inhibiting B16F-10 melanoma cell lines *in vitro* and tumor metastasis *in vivo*.

In conclusion, the results obtained from our study indicate the effectiveness of natural product *A. ferruginea* extract in the inhibition of inflammation, tumor progression and metastasis by regulating level of anti-oxidants, inflammatory mediators, cytokine profile and NF-κB signal transduction pathways. Therefore, *A. ferruginea* could be a new efficient (natural) plant based candidate for cancer therapy. This is most likely due to high content and synergistic activity of pharmacologically active ingredients reported in the phytochemical screening. It is clear that our future and ongoing studies will need to more clearly ascertain which, if any, of the compounds we showed were present in the *A. ferruginea* methanolic extract could be responsible for the protective effects produced *in situ*. Further studies using isolated compounds will help to identify the active principle responsible for the protective effect and the precise mechanism of action behind it.